

AMENDMENTS TO THE CLAIMS

Claims 1 to 11 (cancelled)

Claims 12 to 14 (cancelled)

Claims 15 to 19 (cancelled)

Claim 20 (new)

A pharmaceutical composition, comprising starch granules containing at least one fusion polypeptide containing:

In the N terminal position:

- the peptide sequence of SEQ ID No: 3 corresponding to the granule bound starch synthase GBSSI of *Chlamydomonas reinhardtii* in the form of pre-protein of 708 amino acids, or the sequence SEQ ID No: 5 corresponding to the GBSSI of *Chlamydomonas reinhardtii* in the form of mature protein of 651 amino acids, said sequences being encoded by nucleotide sequences SEQ ID No: 2, and 4 respectively, or by a nucleotide sequence derived by degeneration of the genetic code of the aforementioned nucleotide sequences, and coding for the aforementioned pre-GBSSI or GBSSI of *Chlamydomonas reinhardtii*,

- or a fragment of the GBSSI of *Chlamydomonas reinhardtii* represented by SEQ ID No: 3, in which the amino acid of the amino terminal end corresponds to that located in one of the positions 1 to 58 of SEQ ID No: 3 and in which the amino acid of the carboxy terminal end corresponds to that located in one of the positions 495 to 708 of SEQ ID No: 3,
- and, in the C-terminal position, a peptide or polypeptide of interest, the C-terminal part of the amino acid sequence of the GBSSI or fragment thereof mentioned above, thus being bound to the N-terminal part of the peptide sequence of interest, the said fusion polypeptide being encoded by a recombinant nucleotide sequence containing in the 5' → 3' direction, a nucleotide sequence coding for said *Chlamydomonas reinhardtii* GBSSI or fragment thereof, the said nucleotide sequence coding for this enzyme being positioned upstream of a nucleotide sequence coding for the peptide or polypeptide of interest, the peptide of interest in the said fusion polypeptides possessing a defined therapeutic effect.

Claim 21 (new)

A pharmaceutical composition according to claim 20, wherein fragment of the GBSSI of *Chlamydomonas reinhardtii* represented by SEQ ID No: 3 is:

the sequence SEQ ID No: 7 corresponding to a fragment of 438 amino acids of the peptide sequence of the GBSSI of *Chlamydomonas reinhardtii*,

the sequence SEQ ID No: 9 corresponding to a fragment of 531 amino acids of the peptide sequences of the GBSSI of *Chlamydomonas reinhardtii*, said sequence being encoded by nucleotide sequences SEQ ID Nos: 6 and 8 respectively, or by a nucleotide sequence derived by degeneration of the genetic code of the aforementioned nucleotide sequences, and coding for the aforementioned GBSSI fragments of *Chlamydomonas reinhardtii*.

Claim 22(new)

A pharmaceutical composition according to claim 20 wherein the peptide or polypeptide is selected from:

- those encoding biologically active peptides, especially peptides of therapeutic interest or that can be used in the agricultural and food industry, or
- those encoding enzymes that are able to transform starch, such as enzymes that interact with α -glucans including various hydrolases, phosphorylases, α -1,4-glucanotransferases, branching enzymes, amylases, and especially heat resistant hydrolases obtained from extremophiles such as archaebacteria that are active at temperatures above 40°C.

Claim 23 (new)

A pharmaceutical composition according to claim 20 wherein the fusion polypeptide contains a cleavage site positioned between the starch synthase, and the polypeptide of interest.

Claim 24 (new)

A pharmaceutical composition according to claim 20, wherein the diameter of the starch granules being between about 0.1 μm and several tens of μm , and the proportion by weight of the fusion polypeptides in these granules being between about 0.1% and 1%.

Claim 25 (new)

A pharmaceutical composition comprising at least one fusion polypeptide containing:

- in the N-terminal position:

* the peptide sequence SEQ ID No: 3 corresponding to the granule bound starch synthase GBSSI of *Chlamydomonas reinhardtii*, in the form of pre-protein of 708 amino acids, or the sequence SEQ ID No: 5 corresponding to the GBSSI of *Chlamydomonas reinhardtii*, in the form of mature protein of 651 amino acids, said sequence being encoded by nucleotide sequences SEQ ID Nos: 2 and 4, respectively, or by a nucleotide sequence derived by degeneration of the genetic code of the aforementioned nucleotide sequences, and coding for the aforementioned pre-GBSSI or GBSSI of *Chlamydomonas reinhardtii*,,

* or a fragment of the GBSSI of *Chlamydomonas reinhardtii*, represented by SEQ ID No: 3, in which the amino acid of the amino terminal end corresponds to that located in one of the positions 1 to 58 of SEQ ID No.: 3, and in which the amino acid of the carboxy terminal end corresponds to that located in one of the positions 195 to 708 of SEQ ID No: 3,

- and, in the C-terminal position, a peptide or polypeptide of interest, the C-terminal part of the amino acid sequence of the GBSSI or fragment thereof mentioned above, thus being bound to the N-terminal part of the peptide sequence of interest, the said fusion polypeptide being encoded by a recombinant nucleotide sequence containing in the 5' → 3' direction, a nucleotide sequence coding for said *Chlamydomonas reinhardtii* GBSSI or fragment thereof, the said nucleotide sequence coding for this enzyme being positioned upstream of a nucleotide sequence coding for the peptide or polypeptide of interest, the peptide of interest in the said fusion polypeptides possessing a defined therapeutic effect.

Claim 26 (new)

A pharmaceutical composition according to claim 25 wherein the fragment of GBSSI of *Chlamydomonas reinhardtii*, represented by SEQ ID No: 3 is:

. the sequence SEQ ID No: 7 corresponding to a fragment of 438 amino acids of the peptide sequence of the GBSSI of *Chlamydomonas reinhardtii*,,

- the sequence SEQ ID No:9 corresponding to a fragment of 531 amino acids of the peptide sequence of the GBSSI of *Chlamydomonas reinhardtii*,
- said sequences being encoded by nucleotide sequences SEQ ID Nos: 6 and 8 respectively, or by a nucleotide sequence derived by degeneration of the genetic code of the aforementioned nucleotide sequences, an coding for the aforementioned GBSSI fragment of *Chlamydomonas reinhardtii*.

Claim 27 (new)

A pharmaceutical composition according to claim 25 wherein the peptide or polypeptide of interest is selected from:

- those encoding biologically active peptides, especially peptides of therapeutic interest or that can be used in the agricultural and food industry, or
- those encoding enzymes that are able to transform starch, such as enzymes that interact with α -glucans including various hydrolases, phosphorylases, α -1,4-glucanotransferases, branching enzymes, amylases, and especially heat-resistant hydrolyases obtained from extremophiles such as archaebacteria that are active at temperatures above 40°C.

Claim 28 (new)

A pharmaceutical composition according to claim 25 wherein the fusion polypeptide contains a cleavage site positioned between the starch synthase, and the polypeptide of interest.